

REMARKS

By this amendment, claims 1, 13, 20, and 24 have been amended. Claim 20 has been amended to correct a grammatical error and, thus, is not being made for reasons related to patentability and thereby does not narrow the claim scope. The specification has been amended to correct certain informalities. In response to the Examiner's Election of Species Requirement, Applicant elected Group A, directed to Figures 1A, 1B, and 5-7. Accordingly, claims 1-4, 13, 15, 18-20, and 24 are currently pending in the application, of which claims 1, 13, 19, and 24 are independent claims. Applicant respectfully submits that the above amendments do not add new matter to the Application and are fully supported by the specification. Support for the amendment(s) and added claims may be found at least in Figures 1A, 1B, and 7, and at page 5, lines 12-14 of the specification. In view of the above amendments and the following Remarks, Applicant respectfully requests reconsideration and timely withdrawal of the pending objections and rejections for the reasons discussed below.

Drawing Objection

In the Office Action, the drawings were objected to as failing to comply with 37 C.F.R. § 1.84(p)(4) because reference character "726" has been used to designate both an interior wall of the intensifier body and an intensifier spring, and because of other informalities.

Accordingly, Figure 7 has been amended, as shown in the attached drawing sheets, so that reference character "727" is now used to designate the interior wall of the intensifier body. Figures 1A and 1B have been amended so that they are now completely separated from one another and the reference numbers have been made clearer.

Therefore, Applicant respectfully requests withdrawal of the objection to the drawings.

REPLACEMENT DRAWINGS

Attached hereto are replacement drawings for Figures 1A, 1B, and 7, without any markings. The changes to the drawings are explained below, in the "Remarks" section. All of the drawings on the replacement sheets, as originally filed, are provided herein. The header of each revised drawing sheet includes the following information: (i) replacement sheet, (ii) application number, and (iii) date information. Applicant respectfully requests that the Examiner withdraw the outstanding drawing objection and provide an indication of such consideration in the next Office Action.

Specification Objection

In the Office Action, the specification at page 9, lines 26 and 29 was objected to because both the intensifier spring and the interior wall of the intensifier body were both referred to as reference number 726.

The specification has been amended to refer to the interior wall of the intensifier body as reference number 727.

Accordingly, Applicant respectfully requests withdrawal of the objection to the specification.

35 U.S.C. §102(b) Rejection

Claims 1-4, 13, 15, 18, and 24 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,133,386 to Magee. Applicant respectfully traverses this rejection for at least the following reasons.

In order for a rejection under 35 U.S.C. § 102(b) to be proper, a single reference must disclose each and every claimed feature. Thus, if a cited reference fails to disclose one or more claimed features, then the rejection under § 102(b) is improper.

Amended independent claims 1, 13, 24 recite a combination of features, including “a longitudinally slidable spool.”

The Office Action states on Page 4 that Magee discloses a valve assembly having a control body, opposed solenoid coils 62 positioned at the ends, and an inner spool 12 which includes O-rings 19 to retard internal leakage of fluid. Magee, however, does not disclose a longitudinally slidable spool.

The spools 12,13,15 of Magee remain longitudinally fixed while “[c]ontrol assembly 2 moves freely in the axial direction between spools 12, 13, and 15, sliding in guides 26.” (col. 8, lines 30-33) Moreover, looking at Figure 1, the spools 12,13,15 must remained fixed to provide clearance for the flanges 22,23 to check the movement of control assembly 2 (col.13, lines 2-9) without the need of springs or external linkages to stabilize the control assembly’s position (col. 2, lines 26-34). Thus, Magee fails to disclose at least “a longitudinally slidable spool.”

Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1, 13, and 24 under 35 U.S.C. § 102(b) because Magee fails to disclose each and every feature of the claimed invention as a whole.

Further, Applicant respectfully submits that claims 2-4, 15, and 18 also are not anticipated by Magee, by virtue of their dependencies on claims 1 and 13, as well as for reciting additional, patentably distinct features. Since none of the other prior art of record, whether taken alone or in combination, discloses or suggests the features of these claims, it is respectfully submitted that they are in condition for allowance.

35 U.S.C. §103(a) Rejection

Claims 19 and 20 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,964,406 to Zuo in view of Magee. Applicant respectfully traverses this rejection for at least the following reasons.

In order to reject a claim under 35 U.S.C. §103(a), the three basic criteria must be met to establish a *prima facie* case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to

combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Here, the Examiner admits that not all the claimed features are present in Zuo, but seeks to combine the reference with Magee in a manner that is neither disclosed nor suggested by the prior art of record, which actually teaches away from the claimed invention.

Independent claim 19 recites a combination of features, including "a slidably mounted spool arranged substantially between the first and second solenoid coils, the spool including a mechanism which at least minimizes fluid accumulation between an end of the spool and at least one of the first and second solenoid coil."

The Office Action states at page 6 that Zuo discloses a control valve 12 having inlet and fluid supply passages 40,43, a first solenoid 13 and a second solenoid 14, a spool valve member 30 coupled to first and second solenoids 13,14, an actuated fluid cavity 44 having a plunger 51 and a piston 50, and is in fluid communication with supply passages 40,43, a fuel pressurization chamber 52 below the plunger 51, and a needle valve member 60. The Office Action concedes that Zuo does not disclose a means for minimizing fuel accumulation between the end of the spool and at least one of the first and second solenoids.

To overcome this deficiency, the Office Action attempts to combine the fuel injector of Zuo with the teachings of Magee in order to reach the claimed invention as a whole. At page 6, the Office Action alleges that it would have been obvious to one having ordinary skill in the art to modify the fuel injector of Zuo with the O-rings 19 in the servo valve of Magee to prevent

fluid accumulation. But the Office Action does not identify any suggestion or motivation to combine Zuo with Magee in the manner proposed by the Examiner.

A *prima facie* case of obviousness can only be established if there is a motivation or suggestion to combine the references. There are three possible sources for a motivation to combine: (1) the nature of the problem to be solved; (2) the teachings of the prior art; and (3) the knowledge of persons of ordinary skill in the art.” *See* MPEP § 2143.01. The level of skill in the art cannot be relied upon to provide suggestion to combine references. *Id.* The mere fact references can be combined is not enough to establish obviousness unless the prior art suggests the desirability of the combination. *Id.*

The invention of Zuo aims to reduce noise and emissions by closing the needle valve member that controls the nozzle of the fuel injector as quickly as possible. (Col. 1, lines 28-34) Zuo, however, does not disclose latching effects caused by fluid accumulation between the spool and solenoids.

Magee discloses a servo valve—not a fuel injector—having longitudinally fixed spools 12,13,15 disposed between the opposing solenoid coils 62. (FIG. 1; Col. 10, lines 22-29) Because the spools do not move longitudinally, Magee does not contemplate latching effects. Instead, McGee states that O-rings 19 are fitted around spools 12,13,15, to retard internal leakage of the fluid. (Col. 8, lines 30-33) Applicant concedes that O-rings are well known for providing sealing to prevent fluid leakage. But Magee does not disclose or in any way suggest that O-rings 19 would be suitable for minimizing fluid accumulation between a spool and a solenoid to reduce latching effects in a fuel injector. Therefore, the required suggestion or motivation to combine the servo valve of Magee with the fuel injector of Zuo is missing.

Further, Magee actually teaches away from the invention and a person having ordinary skill in the relevant art would not consider Magee pertinent to the problem of latching effects in a fuel injector. Magee is not in the field of Applicant's endeavor because it is a servo valve, not a fuel injector. Nor is Magee pertinent to the problem with which Applicant is concerned, *i.e.*, minimizing fluid accumulation between a solenoid and the spool to reduce latching effects. As noted above, spools 12,13,15 do not move longitudinally between the solenoid coils 62 and, thus, latching effects are not a problem in the servo valve of Magee. Thus, the skilled artisan would not even look to Magee to solve latching problems in fuel injectors.

Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection under § 103 because the required suggestion or motivation is missing, and, therefore, the Office Action does not establish a *prima facie* case of obviousness.

For these reasons, Applicant respectfully submits that claim 19 is allowable over Zuo in view of Magee. Since none of the prior art of record, whether taken alone or in combination, discloses or suggests each and every feature recited in claim 19, Applicant respectfully submits that claim 19, and its dependent claim 20, are in condition for allowance.

Other Matters

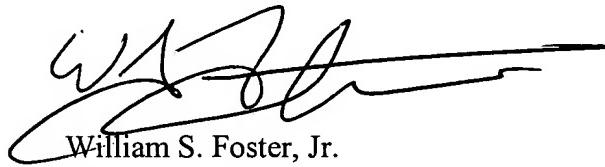
Claim 20 previously recited "the a bore wall." To correct this grammatical error, claim 20 has been amended to delete "the" before "a bore wall." Thus, the amendment was not made for reasons related to patentability and does not narrow the scope of claim 20.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above Application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to **Attorney's Deposit Account No.**

23-1951.

Respectfully submitted,



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